Cancer Moonshot 2017-2023 Looking Ahead



Joint NCAB/BSA Meeting
December 8, 2021

Dinah S. Singer, Ph.D. Deputy Director, NCI



GOALS

- 1. Accelerate progress in our understanding of cancer
- 2. Enhance data sharing
- 3. Encourage greater cooperation & collaboration

Network for Patient Engagement

Immuno- therapy Network

Overcome Drug Resistance

Cancer Data Ecosystem

Intensify Research on Childhood Cancers

Symptom Management

Prevention & Detection Strategies

Retrospective Analysis of Biospecimens

Human Tumor Atlases

New Cancer Technologies

Partnerships



GOAL 1

Accelerate progress in our understanding of cancer

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Symptom Management

Prevention & Detection Strategies

Retrospective Analysis of Biospecimens

Human Tumor Atlases

New Cancer Technologies

Partnerships

Implementation of Recommendations

 2017
 2018
 2019
 2020
 2021

Implementation of Recommendations

2017

Biobank (R&D)

2018

2019

2020

PE-CGS

2021

Network for Patient Engagement

Immuno- therapy Network

Overcome Drug Resistance

Cancer Data Ecosystem

Intensify Research on Childhood Cancers

Symptom Management

Prevention & Detection Strategies

Retrospective Analysis of Biospecimens

> **Human Tumor Atlases**

New Cancer Technologies

Partnerships

#ClinicalTrialsSM Workshop

CCR Rare Tumor Patient Engagement Network (IR) Personal Control of Data Workshop

Patient Engagement Community Liaison for Portal (R&D) PE-CGS (Admin Supp)

Patients as Partners for Portal Design (R&D)



PE-CGS

Patient Engagement and Cancer **Genome Sequencing Network**



Implementation of Recommendations

Network for Patient Engagement

Immuno-therapy Network

Overcome Drug Resistance

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Symptom Management

Prevention & Detection Strategies

Retrospective Analysis of Biospecimens

> **Human Tumor Atlases**

New Cancer Technologies

Partnerships

2017 2018

#ClinicalTrialsSM Workshop Biobank (R&D) Engagement Network (IR) **PRECINCT** Oncology Models Forum

PaCMEN Immunotherapy P01s Metabolism & Tumor Sequelae of Immunotherapy (Admin Supp) **Immunity R01**

CCR Center for Cell-based Therapy (IR)

CITN - Pediatric

Fusion Oncoproteins of Childhood Cancer (APRC)

CCR Rare Tumor Patient Patient Engagement

IOTN Data Centers

IOTN Immunoprevention & Immunotherapy Projects

Data Workshop

IOTN i3 Centers

Portal (R&D)

2019

Personal Control of

IOTN Immunoprevention UG3/UH3 Projects

TCR Gene Therapy (IR)

IOTN Reissuance

PRE-medical

Network

Trials

Cancer

PRECINCT Canine

2020

PE-CGS

Community Liaison for

PE-CGS (Admin Supp)

Mitigating irAEs

Collaborative Meeting

TCR Gene Therapy

Trial Supplement (IR)

Collaborative Moonshot

Projects (Admin Supp)

Patients as Partners for Portal Design (R&D)

2021

NCI/NIAID Effort for Novel Adjuvants (Contract Supps)

Expand NCI-Alliance irAE Biorepository (Admin Supps)

Develop iRRI (Admin Supps)



Ewing Sarcoma R21

Immuno-Oncology Translational Network

PI-DDN

FusOnC2

PI-DDN Reissuance

FusOnC2 Reissuance

PI-DDN Supplements

FusOnC2 Supplements



Pediatric Core (R&D)

A program of the National Cancer Institute of the National Institutes of Health

PI-DDN

Pediatric Immunotherapy Discovery and **Development Network**



A program of the National Cancer Institute of the National Institutes of Health

Claire McCarthy, Ph.D., **NCI** Division of Cancer Biology

Implementation of Recommendations

2017

2018

2019

2020

2021

Accelerating Colorectal Screening and follow-up

through Implementation Science

Network for Patient Engagement

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Dissemination & Implementation Research

Cancer Center Cessation Initiative (Admin Supp)

Comparing CRC Detection R01

Smoking Cessation R01

HPV Vaccine (IR)



AI CRC SCREENING IMPLEMENTATION PROJECT

ISC³

C3I
Cancer Center
Cessation Initiative

Assessing Tolerability Using CTCAE & PRO-CTCAE

IMPACT

cGVHD Symptom Measure (IR)

ACCSIS

Identify and Care for Inherited Cancer Syndromes

RESPOND

CRC Screening for American Indians (Supp)

Accelerating Control of Cervical Cancer (R&D)

PRO Measures to Address Accrual Barriers (R&D)

Outcomes for Pediatric & AYA Cancer Survivors

ISC³

Communication & Decision Making for Inherited Cancer Syndromes

Control of Cervical Cancer (Admin Supps)

ACCSIS Reissuance

Identify and Care for Inherited Cancer Syndromes Reissuance Optimizing Outcomes for Cancer Survivors

Centers in Cancer Control

Diffusion, Sustainability, and Leveraging of 3CI (Admin Supp) ISCC Coordinating Center

Extending HPV Vaccine Trial (IR)

Implementation Science Supplements

Network for Patient Engagement

Immuno- therapy Network

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2017

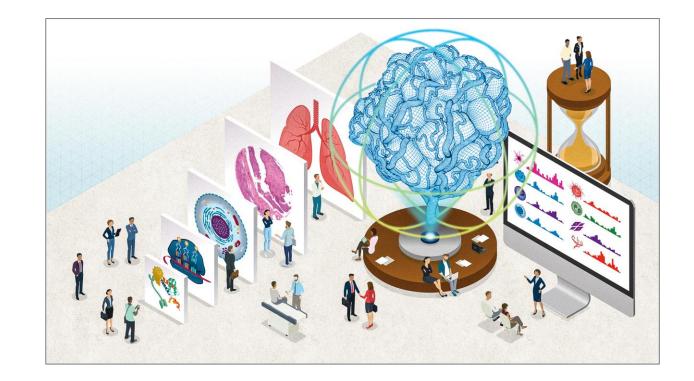
2018

2019

2020

2021





Oncogenomics of Multiple Myeloma P01

Human Tumor Atlas Pilot Projects (R&D)

HTAN

HTAN Supplements

3D Technologies to
Accelerate HTAN
Efforts
HTAN Outreach
Supplements

Implementation of Recommendations

Innovative Tech

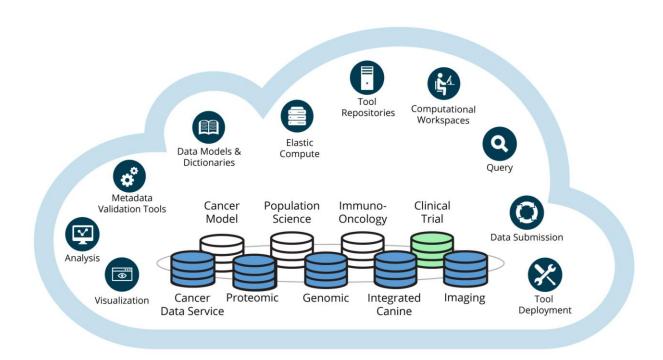
2017 2018 2019 2020 2021 Personal Control of **Network for** Patients as Partners PE-CGS Data Workshop for Portal Design **Patient Engagement** Biobank (R&D) #ClinicalTrialsSM Workshop CCR Rare Tumor Patient Patient Engagement Community Liaison for (R&D)Engagement Network (IR) Portal (R&D) PE-CGS (Admin Supp) **PRECINCT Oncology Models Forum** Immuno-therapy NCI/NIAID Effort for **IOTN Data Centers IOTN i3 Centers** Mitigating irAEs **PaCMEN** Immunotherapy P01s Novel Adjuvants **Network IOTN** Immunoprevention **IOTN** Immunoprevention & Collaborative Meeting (Contract Supps) Metabolism & Tumor Sequelae of Immunotherapy UG3/UH3 Projects Immunotherapy Projects Immunity R01 (Admin Supp) TCR Gene Therapy **Expand NCI-Alliance** TCR Gene Therapy (IR) Trial Supplement (IR) irAE Biorepository CCR Center for Cell-based Therapy (IR) Overcome **DRSN Supplements** (Admin Supps) **IOTN Reissuance** Collaborative Moonshot **Drug Resistance DRSN** Drug Target P01s & STTRs MasterLymph (IR & R&D) Projects (Admin Supp) Develop iRRI **DRSN Supplements** (Admin Supps) Support for GA4GH Office of Cancer Drug **GENIE Supplements** Imaging Data for (Admin Supp) Data Sharing (R&D) ViPOR-P Trial (IR) Resistance (CR) **Cancer Data Ecosystem** APOLLO (R&D) Data Aggregator (R&D) CIMAC-CIDC Network Data Commons (R&D) **DRSN** Coordinating Data Commons (R&D) CRDC DCC (R&D) Center (Admin Supp) Cancer Data Ecosystem (R&D) PI-DDN CTDC (R&D) PI-DDN Reissuance **Intensify Research on** FusOnC2 De-ID of Clinical Ewing Sarcoma R21 Pediatric Core (R&D) Data Ecosystem FusOnC2 Reissuance Text (R&D) **Childhood Cancers** Sustainability (R&D) CITN - Pediatric Assessing Tolerability Using PRO Measures to Address PI-DDN Supplements CTCAE & PRO-CTCAE **CIDC** Supplement Fusion Oncoproteins of Childhood Cancer (APRC) Accrual Barriers (R&D) FusOnC2 Supplements **IMPACT** Outcomes for Pediatric & **Symptom Management** cGVHD Symptom **AYA Cancer Survivors Optimizing Outcomes** ISCC Coordinating Dissemination & Implementation Research Measure (IR) for Cancer Survivors Center ISC³ Cancer Center Cessation Initiative (Admin Supp) ACCSIS Extending HPV **Prevention & Detection** Diffusion, Sustainability, Communication & Decision HPV Vaccine (IR) **Smoking Cessation R01** Vaccine Trial (IR) and Leveraging of 3CI Identify and Care for Making for Inherited **Strategies** (Admin Supp) Cancer Syndromes **Inherited Cancer Syndromes Implementation** Comparing CRC Detection R01 Science Supplements **RESPOND** Control of Cervical Cancer 3D Technologies to (Admin Supps) Accelerate HTAN **Retrospective Analysis** Retrospective Tumor Analysis (R&D) CRC Screening for **HTAN Outreach** Efforts **ACCSIS** Reissuance American Indians (Supp) of Biospecimens Supplements Oncogenomics of Multiple Myeloma P01 Accelerating Control of Identify and Care for Next Gen Tech for Next Inherited Cancer Gen Cancer Models Cervical Cancer (R&D) Human Tumor Atlas Pilot Projects (R&D) Syndromes Reissuance **Human Tumor** Next Gen Models Supp MP2PRT (R&D) **Atlases PDXNet APTRC Supplements HTAN Supplements** Data Viz Methods & DataViz + Cancer Tool Development HTAN Cancer Detection Technologies (SBIR/STTRs) APHIROM (Admin Supps) Microlabs Data Viz + Cancer **New Cancer** Integration & Validation of Technologies (R33/SBIR) **PDXNet Supplements** Minority-PDTCs Supps to Adapt Viz M-PDTC & PDXNet Reissuance Methods for Cancer **Technologies** Models for Cancer Disparities (SBIR Contracts) **PDXNet Supplements DCC Supplements** Moonshot Data Metadata Automation Human Cancer Models Initiative - HCMI (R&D) PSMA-PET of Translation of Optical DREAM Challenge Prostate Cancer (IR) Fluorescence Methods CCR NPNPD (IR) **PACT Partnerships** NCI-DOE Collaborations SBIR Contracts for SBIR Contracts for (Pilots, JDACS4C, & ATOM) Enabling Tech SBIR Contracts for **APOLLO** Tech

Claire McCarthy, Ph.D., NCI Division of Cell Biology



GOAL 2 Enhance data sharing

Cancer Research Data Commons



Moonshot Publications and Data





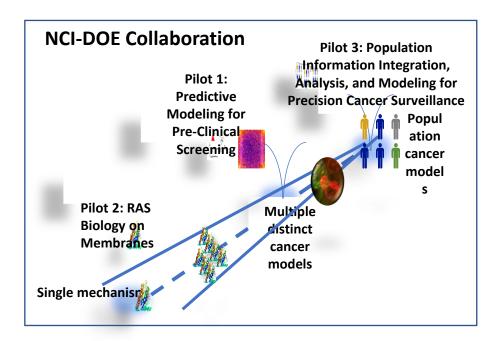
GOAL 3

Encourage greater cooperation & collaboration

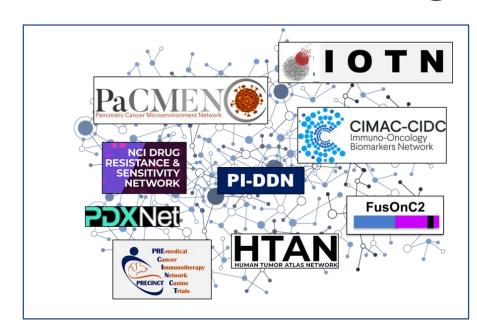
Networks



Partnerships



Collaborative Meetings



Seminar Series



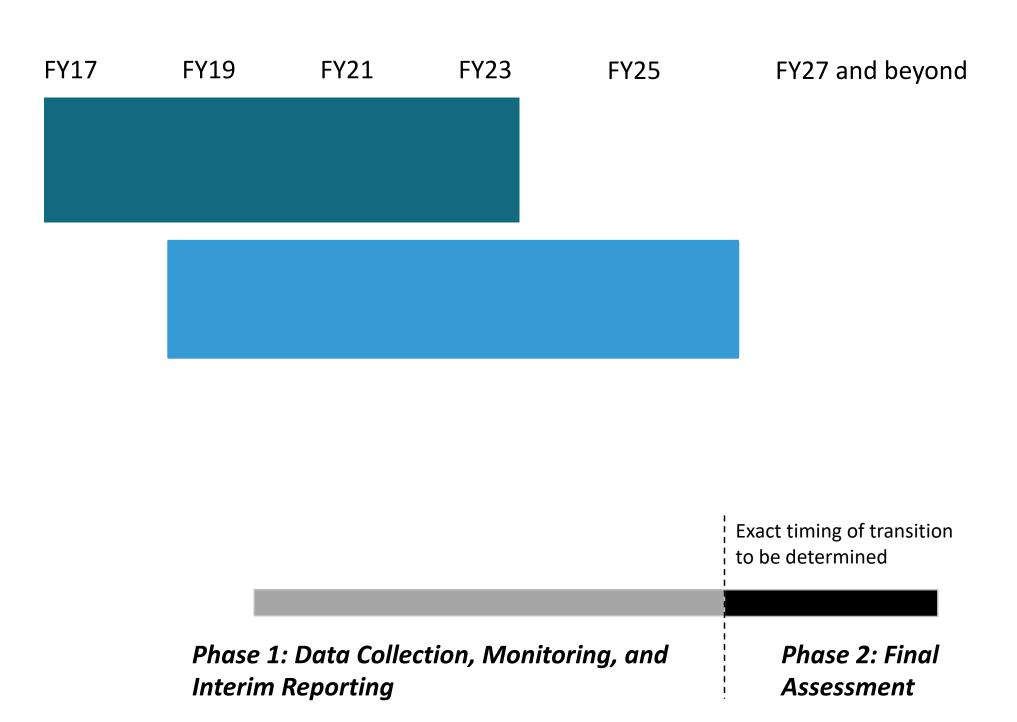
Cancer Moonshot Assessment

Moonshot Appropriation – began in FY17 and is expected to run through FY23

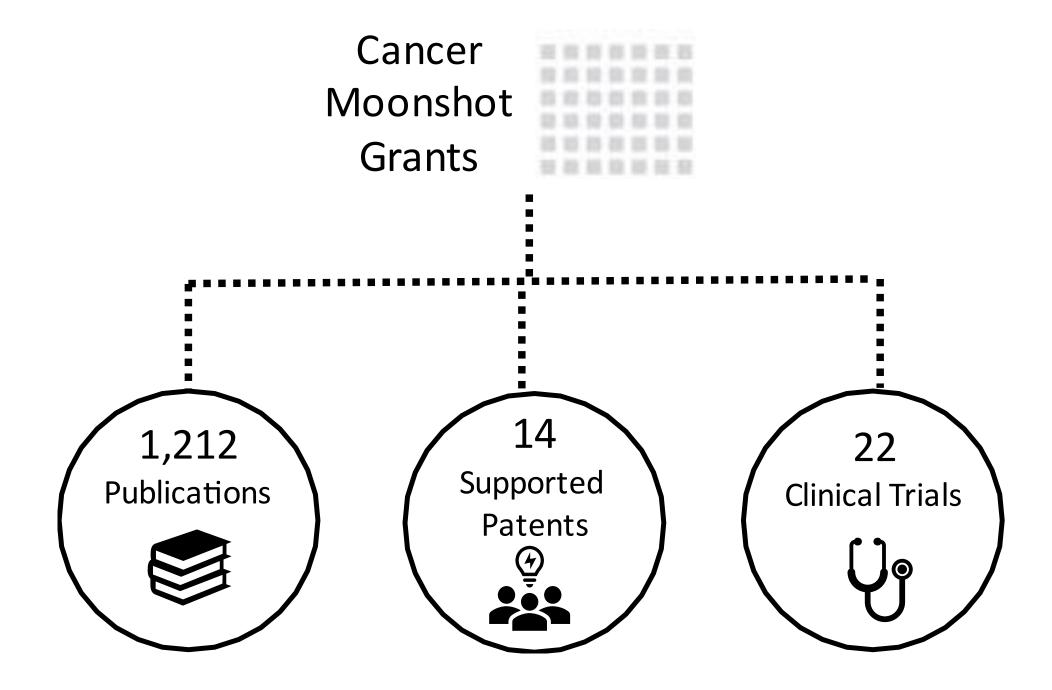
Initiatives – upfront funding and reservation of carryover funds means initiatives will remain active after funding stream ends

Impact - grows over time and important impacts will occur after initiatives are finished

Assessment – initial focus on evidence collection, monitoring, and interim reporting before a final assessment.

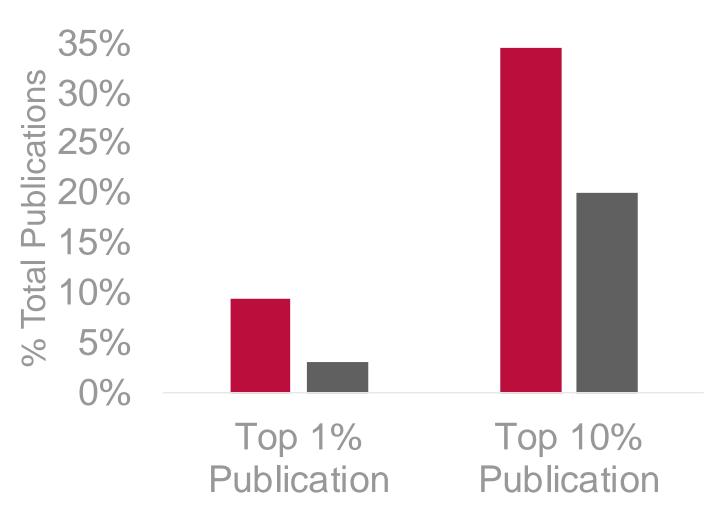


Moonshot Grant Outputs: 2017 – 2020



Data Source: Dimensions for NIH for outputs in 2017 -2020. Includes outputs linked to a MS supported grant. Publications include all types such as journal articles and book chapters.

Moonshot publications are high impact



- Moonshot (n = 1,150)
- NCI comparison group (n = 56,687)

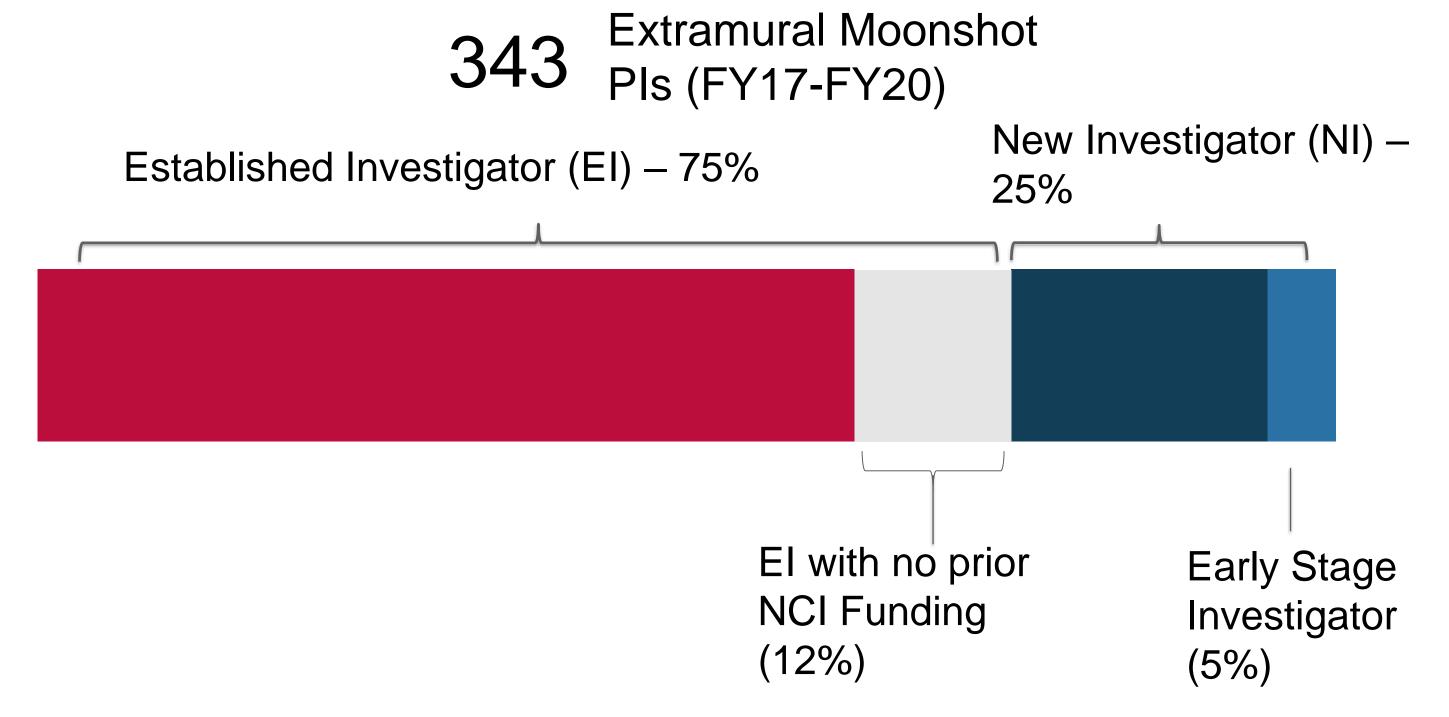
 More Moonshot-supported publications are of high citation impact compared to other NCI supported research

Data Source: Dimensions for NIH, data extracted on 12/14/2020 for publications between 2017 and 2020.

NCI comparison group: Includes publications from 2017 - 2020 that acknowledge NCI funding from a subset of activity codes used in the Moonshot: P01, P50, R00, R01, R21, R33, U01, U19, U24, U2C, U54, UG3, UH3, UM1, and Zs.

Bibliometric percentile: Percentile rank within the PubMed publication set by descending order of total citations, taking into account publication type, RCDC category, and year.

25% of Moonshot Extramural Pls are New Investigators



Methodology: Extramural PIs includes PI/MPIs of moonshot extramural awards (excluding supplements). Established, New, and Early Stage Investigator are based on NIH definitions.



Looking Ahead...

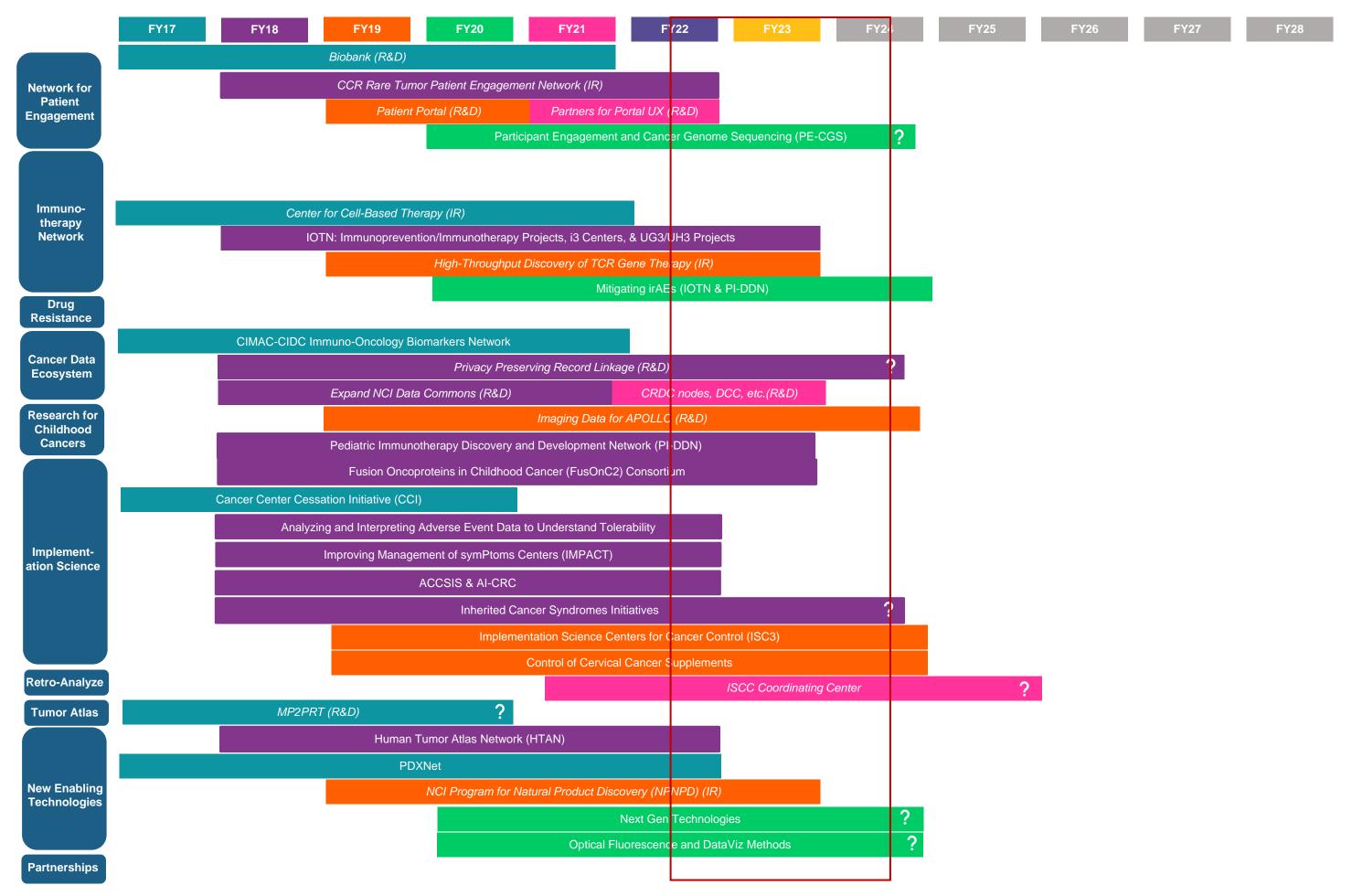
Looking Ahead: The Science

- Build on foundational scientific advances of Moonshot
- Explore new areas and opportunities that have emerged as a result of the Moonshot initiatives
- Continue to encourage collaborative science to complement investigator-initiated research
- Make data sharing and open access publication the norm across cancer research

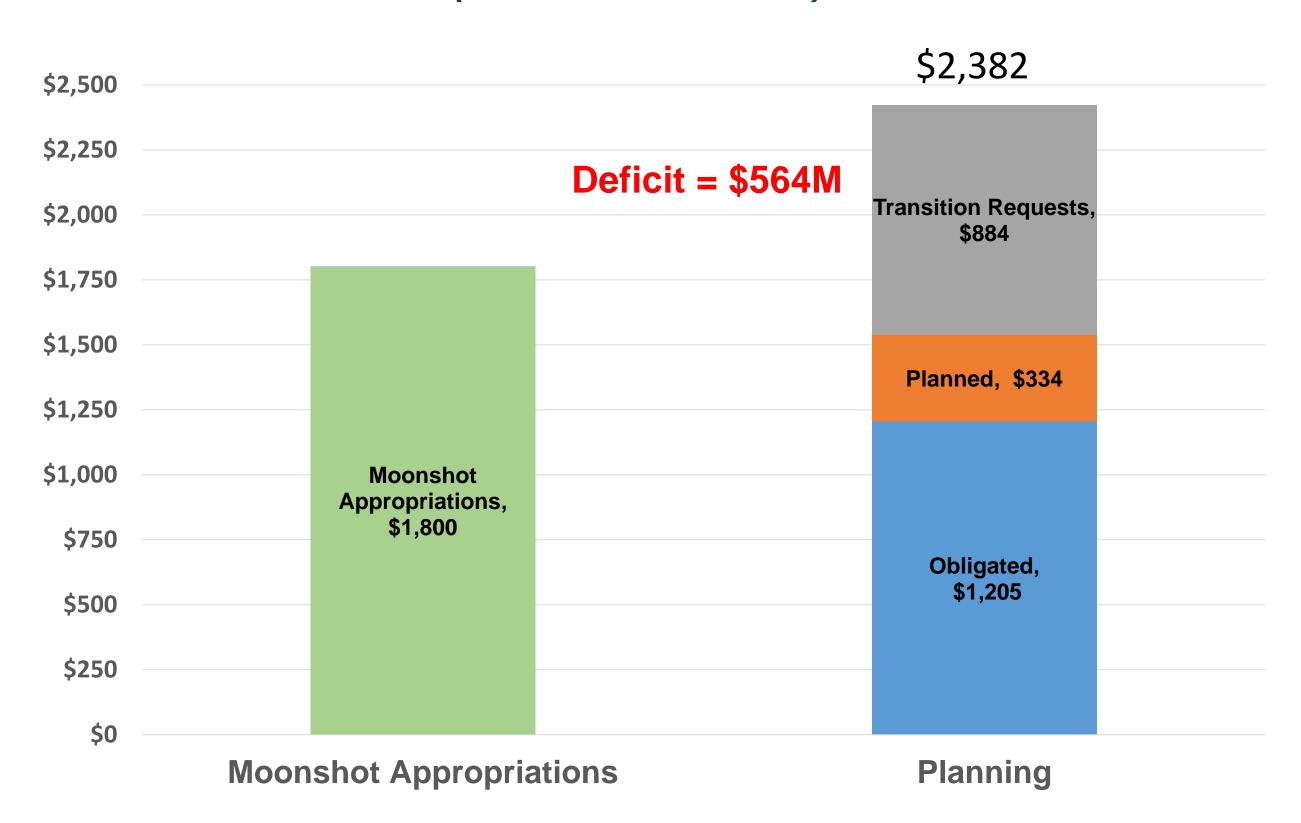
Looking Ahead: The Transition

- Determine which Moonshot programs, including developed infrastructure, need continued support to accomplish their goals and which do not
- Develop and support new programs that have emerged as a result of the Moonshot initiatives
- Balance the needs of Moonshot-related programs with non-Moonshot programs
- Establish a transition plan to "ease" Moonshot-funded programs into appropriated funding.

Moonshot Transition Planning: Programs Requesting Continuation



Moonshot Transition Planning (dollars in millions)



Distribution of Moonshot Spending and Commitments (\$1.52B)

Symptom Management

New Cancer Technologies

Overcoming Drug Resistance

Immunotherapy

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Prevention Early Detection

Cancer Data Ecosystem

Childhood Cancers

Patient Engagement Network

Human Tumor Atlases

Distribution of Moonshot Transition Requests (\$844M)

Prevention Early Detection
Cancer Data Ecosystem
Immunotherapy
Patient Engagement Network
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Looking Ahead: Next Steps

- Continue to develop and support new programs that have emerged from Moonshot initiatives
- Balance the needs of Moonshot-related programs with non-Moonshot programs
- Continue to develop a transition plan to "ease" Moonshot-funded programs into the appropriated funding
- Continue concurrent assessment and undertake final assessment of the Moonshot

Thanks to the Many NCI Staff Who Implemented the Cancer Moonshot



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Network for Direct Patient Engagement

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 - Nita Seibel
 - Malcolm Smith
- Adult Immunotherapy
 - Kevin Howcroft
 - Lillian Kuo
 - Elad Sharon
- Therapeutic Target Identification to Overcome Drug Resistance
 - Jeff Hildesheim
 - Percy lvy
- National Data Ecosystem
 - Stephen Chanock
 - Tony Kerlavage
 - Lynne Penberthy
 - Betsy Hsu

- **Fusion Oncoproteins in Childhood Cancers**
 - Keren Witken
 - Malcolm Smith
 - Judy Meitz
- Implementation Science
 - David Chambers
 - Kathy Helzlsouer
 - Paul Jacobsen
 - Diane St Germain
 - Asad Umar
- Retrospective Analysis of Biospecimens
 - Irina Lubensky
 - Joanna Watson
 - Laura Yee
 - Meg Mooney
- Human Tumor Atlas
 - Shannon Hughes
 - Tracy Lively
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- New Enabling Technologies
 - Jennifer Couch
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